NOTES ON THREE SOUTH AFRICAN TERRESTRIAL UTRICULARIAE.

(With Plate 11.A.)

By Edith L. Stephens.

I. Utricularia capensis Spreng., with Utricularia Ecklonii Spreng.

In the "Flora Capensis" these small species, both originally described by Sprengel, are separated in the key to the genus by the size of the corolla (3—5 lin. long in *U. capensis* and 2—2½ lin. in *U. Ecklonii*), and in the specific descriptions further differences appear in the degree of lobing of the lips of the corolla and the length of the spur. These are illustrated in Hooker's "Icones Plantarum" (plates 2793 and 2794).

Examination of a large number of living specimens has shown that "typical" specimens of *U. capensis* generally grow in wet or consistently damp spots, and "typical" ones of *U. Ecklonii* in places that are drier or only intermittently wet. In those taken from localities of an intermediate character, it is often very difficult to decide between the two species. This suggested the possibility of the apparent differences being due merely to environment, and the desirability of testing this by experiment.

At the end of September, 1934, several clumps of typical large-flowered *U. capensis* were collected on the Zuurvlakte, 40 miles north of Ceres. These clumps were kept growing under "wet bog" conditions for two months, and continued to produce typical-sized flowers, so that it was evident there was no admixture of *U. Ecklonii*. Similarly a patch of *U. Ecklonii* from the Cape Flats was taken and kept under observation in the dampish sand of its habitat, and remained typically small-flowered.

On November 27th the two sets of flowering clumps were placed side by side in water in a shallow tray, the water being changed twice a week. The flowering season was now ending, so the experiment was kept going till the next season. Precautions were taken to prevent any stolons from one species penetrating a clump of the other, and all fruits formed were either removed before ripening or else pushed down into the soil of their own clumps before the seeds were shed.

The plants had not flowered again before the end of June, 1935, and as I left then for Europe, Mrs. M. R. Levyns very kindly took charge of the experiment. Both sets of plants flowered well in September and October, and she reported that there was now little or no difference in the size of inflorescences and flowers—certainly no specific difference. She also preserved flowers from the two sets, and these I have examined in detail. No difference could be found between them. Moreover both sets resembled the "control" flowers of *U. capensis* which had been preserved for comparison from the clumps of that species before the start of the experiment. The only difference from these flowers was in size, those from the experiment being for the most part slightly smaller than the originals, due no doubt to the artificial cultural conditions. But they still reached the minimum measurements for *U. capensis*, and all corresponded exactly to the description and figures of the species.

From this it may be inferred that *U. Ecklonii* is a growth-form of *U. capensis*, found in drier conditions or in places of a more variable water-content than the typical *U. capensis*. The description of the two species should therefore be combined under *U. capensis*, and *U. Ecklonii* sunk in that species.

II. UTRICULARIA BRACHYCERAS Schltr.

In the Flora Capensis (vol. 4, section 2, p. 431) Stapf gives the following note after his account of "*U. Ecklonii*": "Schlechter, in Engl. Jahrb. XXVII. 191, described *Utricularia brachyceras*, collected by him on Pakhuis Mountain, at 2,500 ft. (No. 8601 !). It seems to be an exact parallel to *U. capensis*, var. *brevicalcarata*, Oliv.,* and to stand in the same relation to *U. Ecklonii*, as that variety to *U. capensis*, viz. as a short-spurred sport. The same state was also collected by Drège near Ellenbogenfonteinsberg, together with an almost normal long-spurred form."

Stapf figures Schlechter's plant (Ic. Pl. 28, Pl. 2793, fig. 14) under *U. Ecklonii* as "Flower with short-spurred corolla (*U. brachyceras*, Schlecht.)." This figure shows the form of the upper lip of the corolla and the spur correctly, but the position of the lower lip is incorrect, for it is shown deflexed as it sometimes appears in the dried material, instead of horizontal as in life.

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* Unfortunately Drège's short-spurred specimen from the Giftberg (Drège 7884) on which Oliver bases this variety is not accessible in South Africa, nor is the one from Ellenbogenfonteinsberg also mentioned above by Stapf; and as Oliver makes no mention of the character of the stigma—the decisive diagnostic character of *U. brachyceras*—I cannot give an opinion as to the identity of either.

After examination of copious living material of plants from the type locality of *U. brachyceras*, which I have compared with the type specimens, I am convinced that it is quite distinct from *U. capensis* (including *U. Ecklonii*). Schlechter's description is inadequate and does not extend beyond the corolla, thus omitting the distinctive characters of the stigma, viz. (i) the abortion of one lip, (ii) the much greater development of the other than in *U. capensis* (cf. plate 11A, fig. 10, with Ic. Pl. 2794, fig. 8). This is the most critical point of distinction between the species. As it is probable his description was made from dried material, the following more detailed description is given :

Utricularia brachyceras Schlechter.

U. capensis Sprengel affinis sed corolla alba, calcare brevissimo, et stigmatis labio supero abortivo, labio infero ligulato vel obovato differt.

Herba terrestris, perpusilla, inter muscos in solo humido reptans. *Stolones* tenuiter filiformes vel capillares ; folia, utriculi, et rhizoidea e stolonibus orta. *Folia* secundum stolones sparsa, ad pedunculorum bases subrosulata ; lamina anguste linearis vel fere teretia, obtusa, in petiolum longe attenuata, cum petiolo ad 1 cm. longa, 0·5 mm. lata. *Utriculi* e stolonibus foliisque orti, ovoideo-globosi, 1 mm. longi, basi breviter stipitati. *Flos* solitarius. *Pedunculus* filiformis, strictus vel leviter flexuosus, 2—4 cm. longus, bracteis vel bracteolis 2—3 minutis prope stipitem positis. *Sepala* persistentes ; superum obovato-orbiculatum, concavum, circa 0·75 mm. longum (in typo "vix 0·2 cm. diametiente" dictum, sed errante) ; inferum ovatum, leviter concavum, circa 0·5 mm. longum. *Corolla* alba, praeter labium superum lineis paucis purpureis leviter notatum et labii inferi palatum luteum, 3 ad 4 mm. longa ; tubo 0·25 mm. longo ; calcar rotundatum, ad 0·5 mm. longum ; labium superum erectum, obovatum vel cuneato-obovatum, 1·25 ad 1·5 mm. longum, emarginatum vel plus minusve 2-lobum ; labium inferum late patens, flabellatum, marginibus undulatis, undis crispatulis, circa 3 mm. longum latumque, palatum laeve, subbigibbosum. *Filamenta* curva, filamentum 0·25 longum, antherae breviores contiguae. pollinis granum globosum, longitudinaliter vittatum, 22 μ dimetiens, *Stylus* 0·1 mm. vel brevior, complanatus ; stigmatis labium superum absens, labium inferum late ligulatum vel obovatum, apice rotundato, persistens, primo leviter inflexum, deinde reflexum, 0·5—0·8 mm. longum. *Capsula* fere globosa, parum longior quam lata, 1—1·25 mm. longa, dehiscens primo longitudinaliter post sepalum anterius, deinde irregulariter. Semina lenticularia, 0·25 mm. diam., tenuiter irregulariterque reticulata.

Hab. Cape Province, Clanwilliam Division, Pakhuisberg, Aug. 1896, R. Schlechter 8601 ! Pakhuis Pass, Sept. 1937, E. L. Stephens 2002 !

This attractive and very distinct species was found on Sept. 21, 1937, close to the outspan on Pakhuis Pass. It was growing on a gentle rock-slope, in moss through which water was oozing, and was sheltered by an overhanging rock. Such ideal conditions for a terrestial bladderwort must be rare in that rather dry region, and no similar spot could be found in the time available. Schlechter collected his specimens " in saxosis humidis, in monte Pakhuis-Berg, alt. 2,500 ped." This is the altitude of the Outspan, and it is possible that he may have collected from the same spot.

The general appearance of the flowers suggested a cloud of tiny snow-flakes settling on the moss. These white flowers and the very short spur distinguish it at a glance from all other South African terrestrial bladderworts. From its nearest ally, *U. capensis*, it is further distinguished by the absence of an upper stigma lip and the well-developed ligulate or obovate lower stigma lip. (The term " stigma lip " is used in conformity with the " Flora Capensis " on this genus.)

Description : A delicate, very dwarf, terrestrial herb, with finely filiform or capillary stolons which creep among moss on wet soil and bear leaves, bladders and occasional rhizoids. *Leaves* scattered on the stolons, but at base of peduncle usually 2 or 3 together ; lamina narrowly linear or almost terete, obtuse, very gradually attenuated into the petiole, including petiole up to a centimetre long, and up to 0·5 mm. broad. *Bladders* borne on stolons and on leaves, ovoid-globose, a mm. in length, with a short stalk at basal end. *Peduncle* filiform, straight or slightly flexuose, 2 to 4 cm. long, simple except in scape formed by germinating seed, which may form one or two others from its base (fig. 2). *Flower* solitary with 2 or 3 minute oval bracts or bracteoles just below it. *Sepals* united at base, persistent, becoming separated by enlargement of fruit ; upper sepal obovate-orbicular, concave, about 0·75 mm. long ; lower ovate, slightly concave, about 0·5 mm. long. *Corolla* creamy-white except for several delicate mauve or violet lines running down the upper lip and a yellow flush on the palate of the lower lip, 3 to 4 mm. long ; tube 0·25 mm. long ; spur rounded, up to 0·5 mm. long ; upper lip erect, obovate or cuneate-obovate, 1·25 to 1·5 mm. long, margin undulating, emarginate or more or less bilobed at the apex, lower lip about 3 mm. long and broad, carried horizontally, margin frilly, palate smooth, slightly 2-gibbous. *Stamens* with curved filaments and contiguous anthers ; filaments 0·25 mm. long, anthers shorter than filaments ; pollen-grain globose, longitudinally vittate, 22 μ in diameter. *Style*

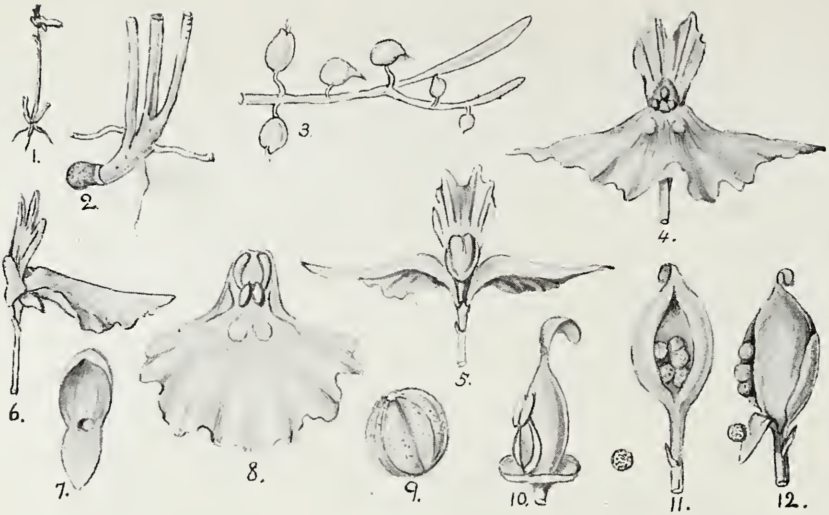

PLATE 11.A.

1. *Utricularia brachyceras.* Plant life size. 2. Base of scape formed directly from germinating seed, showing three peduncles, stolon, a rhizoid, and seed-coat still attached ×16. 3. Stolon with leaves and bladders × 8. 4. Front view of flower × 15. 5. Back view of flower × 15. 6. Side view of flower × 10. 7. Calyx from above × 15. 8. Lower lip of corolla and stamens × 10. 9. Pollen grain × 600. 10. Pistil and stamens × 24. 11. Dehiscent capsule, front sepal removed × 20. 12. Dehiscent capsule, front sepal deflexed × 20.

(*Del.* B. Carter,)

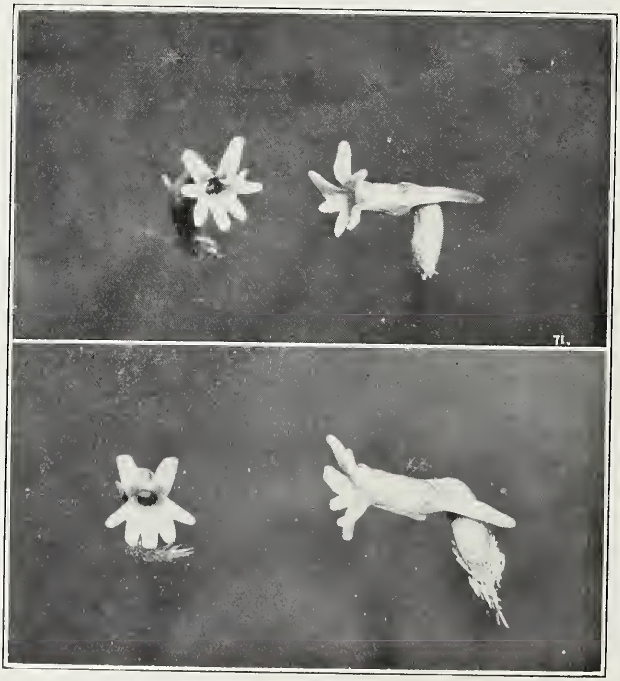

PLATE 11.B.

Holothrix longicornu, Lewis. Four views of the flowers, × 3½. showing the 5-lobed lip, glabrous sepals and long, straight spur. (*Phot.* W. Y. Cutting.)

very short, 0·1 mm. or less, flattened in same axis as stigma; upper stigma-lip entirely absent; lower broadly ligulate or obovate, apex rounded, persistent, at first slightly curved forward, later reflexed, 0·5—0·8 mm. long. *Capsule* almost globose, slightly longer than broad, 1—1·25 mm. long, opening first in the median line behind anterior sepal, later often further dehiscing irregularly. *Seeds* lenticular, 0·25 mm. in diameter, finely and irregularly reticulate.

No details of the bladder are given in the above description, as seeds have been sent to Professor F. E. Lloyd in the hope that he may be able to grow the plant and add another to his fine series of studies on the vegetative morphology of this genus. The material described was collected during a University Botanical expedition organised by Professor Compton, to whom I am indebted for the opportunity afforded. My thanks are also due to Miss B. Carter for the trouble she has taken over the accompanying drawings, made from living plants, and to Mrs. Bolus for her kindness in reading through this paper in manuscript.

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February, 1938.

NEOHENRICIA.

By L. Bolus, D.Sc.

Neohenricia L. Bolus, nom. nov.—*Henricia* L. Bolus (*Mesembryanthemaceae*), nom. invalidum quia **Henricia** Cass. prius publicata est. **Neohenricia Sibbettii** L. Bolus, comb. nov.—*Henricia Sibbettii* L. Bolus.